

REMARKS

In accordance with the foregoing, claim 1 is amended and claims 11 - 12 have been cancelled without prejudice or disclaimer. No new matter is presented in this Amendment.

Rejection of claims 1, 2, 3, 11, 15, and 16 under 35 U.S.C. §102(b) or under 35 U.S.C. §103(a) Moriwaki et al.

At page 3 of the Office Action, claims 1, 2, 3, 11, 15, and 16 were rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative under 35 U.S.C. §103(a) as obvious over Moriwaki et al. (U.S. Patent 6,258,480). The Examiner alleged that Moriwaki et al. discloses a battery having a battery case constructed of aluminum or an aluminum alloy and that has a nickel layer deposited on the outside or inside face of the battery case, the thickness of the nickel layer being at least 3 to 5 μm but less than 30 μm and the thickness of the bottom portion of the battery case being 0.5 mm. For the following reasons, this rejection is traversed and reconsideration is requested.

Amended claim 1 relates to a secondary battery comprising an electrode unit having a positive electrode plate, a negative electrode plate and a separator disposed therebetween, a can having a bottom portion and in which the electrode unit and an electrolytic solution are accommodated and sealed, the can comprising aluminum or an aluminum alloy; and a layer provided on at least an outer surface of the bottom portion of the can. The amended claim further includes the limitation from claim 12 that the layer has a thickness of 30 μm to 100 μm .

Moriwaki et al., on the other hand, describes a battery having a metal case constructed of aluminum and having a nickel layer having a thickness less than 30 μm on at least the inside face or the outside face of the metal case. The requirement of a thickness of the nickel layer of less than 30 μm is repeated throughout Moriwaki et al. Therefore, Moriwaki et al. does not disclose a layer on an outer surface of the bottom portion of the can having a thickness of 30 μm to 100 μm .

Moreover, it is respectfully submitted that amended claim 1 would not have been obvious over Moriwaki et al. It is alleged by the Examiner at page 6 of the Office Action (regarding claim 12) that it would have been obvious to optimize the thickness of the nickel layer of Moriwaki et al. to ensure adequate reduction in contact resistance. However, it is not seen how contact resistance is reduced by increasing the thickness of a nickel layer above the minimum or by providing a layer with a thickness of 30 μm or greater, particularly since contact resistance is an interfacial property that varies primarily according to surface conditions and surface composition.

Moreover, although the Examiner cites MPEP Section 2144.04 as containing court

decisions to support the allegation that a device that differs from the prior art in relative dimensions is not patentably distinct, none of the court decisions discussed in Section 2144.04 relate to the issue of a change in thickness of a layer. It is respectfully submitted that it would be understood by persons skilled in the art that a change in thickness of a layer is a different type of change than a mere change in size of an object, and that the properties of a layer and its suitability for various purposes can change significantly depending on its thickness. For example, it is described in the present specification that a thickness of 30 μm to 100 μm provides an appropriate welding strength for welding of a lead. In Moriwaki et al., on the other hand, there is no suggestion whatsoever that a nickel layer should be greater than 30 μm .

Therefore, the rejection should be withdrawn.

Rejection of claims 4, 5, and 10 under 35 U.S.C. §103(a) over Moriwaki et al. and further in view of Seiji

At page 4 of the Office Action, claims 4, 5, and 10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki et al. and further in view of the Seiji (Japanese Patent 60124351). The Examiner alleged that Seiji discloses a nonaqueous electrolyte cell having a copper layer on the outside surface of the positive electrode enclosure and that the reference teaches that the use of nickel or copper on the outside surface of the terminal face reduces the contact resistance. The Examiner alleged that it would have been obvious to use copper on the outside surface of the battery case to reduce contact resistance. For the following reasons, this rejection is traversed and reconsideration is requested.

As noted above, Moriwaki et al. does not teach or suggest a layer on an outer surface of the bottom portion of a can of a secondary battery having a thickness of 30 μm to 100 μm . Moreover, Seiji does not teach or suggest any thickness of its nickel or copper layer. Therefore, combining the secondary battery of Moriwaki et al. with a copper layer according to Seiji would not have met all of the limitations of the present claims. Therefore, the rejection should be withdrawn.

Rejection of claims 6 and 7 under 35 U.S.C. §103(a) over Moriwaki et al. and further in view of Morishita et al.

Also at page 4 of the Office Action, claims 6 and 7 were rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki et al. and further in view of Morishita et al. (U.S. Patent 5,976,729). The Examiner alleged that Morishita et al. discloses a cell with a reliable protective circuit or safety device and that the bottom surface of the battery can is welded to a first lead plate, which may be nickel or nickel alloy, and the first lead plate is welded via resistance welding to a second lead plate for connection to the battery such that the protective

circuit or safety device is connected to the battery. The Examiner took the position that it would have been obvious to connect the safety device to the cell via a welding method to ensure proper protection of the cell during abnormal operation. For the following reasons, this rejection is traversed and reconsideration is requested.

As noted above, Moriwaki et al. does not teach or suggest a layer on an outer surface of the bottom portion of a can of a secondary battery having a thickness of 30 μm to 100 μm . Moreover, Morishita et al. does not describe any layer on an outer surface of the bottom portion of a can of a secondary battery but only describes that a lead plate is welded onto the bottom of a can. Therefore, the combination of Moriwaki et al and Morishita et al. would not have taught all of the limitations of the present claims. Therefore, the rejection should be withdrawn.

Rejection of claims 8 and 9 under 35 U.S.C. §103(a) over Moriwaki et al. and further in view of Morishita et al.

At page 5 of the Office Action, claims 8 and 9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki et al. and further in view of Morishita et al. The Examiner alleged that Morishita et al. discloses that a two-layer lead is attached to the bottom surface of the battery and that the first layer of the lead is aluminum or an aluminum alloy and the second layer is nickel or a nickel-plated stainless or nickel plated copper. The Examiner acknowledges that the reference does not explicitly teach that the melting point of the materials differ by 500 °C or less or by 200 °C or less. The Examiner takes the position that it would have been obvious to ensure that the materials used in the construction of the battery leads and surface layers can be joined without compromise to the structural integrity of the battery. For the following reasons, this rejection is traversed and reconsideration is requested.

As noted above, Moriwaki et al. does not teach or suggest a layer on an outer surface of the bottom portion of a can of a secondary battery having a thickness of 30 μm to 100 μm . Moreover, Morishita et al. does not describe any layer on an outer surface of the bottom portion of a can of a secondary battery but only describes that a lead plate is welded onto the bottom of the can. Therefore, the combination of Moriwaki et al and Morishita et al. would not have taught all of the limitations of the present claims. Therefore, the rejection should be withdrawn.

Rejection of claim 10 under 35 U.S.C. §103(a) over Moriwaki et al. and Seiji and further in view of Morishita

At page 6 of the Office Action, claim 10 was rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki et al. and Seiji and further in view of Morishita et al. The Examiner

alleged that Morishita et al. discloses a cell with a reliable protective circuit or safety device having leads connecting the battery and the associated protective circuit or safety device. The Examiner took the position that it would have been well known to electrically connect a safety device to the battery for cell protection. For the following reasons, this rejection is traversed and reconsideration is requested.

As noted above, Moriwaki et al. does not teach or suggest a layer on an outer surface of the bottom portion of a can of a secondary battery having a thickness of 30 μm to 100 μm . Therefore, the combination of Moriwaki et al. and Morishita et al. would not have taught all of the limitations of the present claims.

Rejection of claims 11 and 12 under 35 U.S.C. §103(a) over Moriwaki et al.

Also at page 6 of the Office Action, claims 11 and 12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki et al. The Examiner alleged that Moriwaki et al. discloses that the nickel or copper layer of the bottom inside or outer surface of the battery case is less than 30 μm , and that this encompasses the range of 0.5 to 30 μm . The Examiner alleged that it would have been obvious to optimize the thickness of the nickel layer to ensure adequate reduction in contact resistance.

This rejection is moot since claims 11 and 12 are canceled. The limitations of claim 12 are included in amended claim 1, and the allegations of the Examiner regarding claim 12 are discussed above with respect to claim 1.

Rejection of claim 12 under 35 U.S.C. §103(a) over Moriwaki et al. (U.S. Patent 6,258,480) and further in view of Seiji

Also at page 6 of the Office Action, claim 12 was rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki et al. The Examiner alleged that a change in thickness is within the level of ordinary skill in the art. For the following reasons, this rejection is traversed and reconsideration is requested.

This rejection is moot since claims 11 and 12 are canceled. The limitations of claim 12 are included in amended claim 1, and the allegations of the Examiner regarding claim 12 are discussed above with respect to claim 1.

Rejection of claims 13 and 14 under 35 U.S.C. §103(a) over Moriwaki et al. and further in view of Shibata et al.

At page 7 of the Office Action, claims 13 and 14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki et al. and further in view of Shibata et al. (EP 0 899 799

A2). The Examiner alleged that Shibata et al discloses that the bottom surface of a jar can of a secondary battery consists of multiple layers in which the battery can bottom surface is aluminum or aluminum alloy, the layer adjacent to the exterior of the bottom of the can is iron or a ferrous alloy and that the layer adjacent to the exterior surface of the iron layer is nickel. The Examiner took the position that it would have been obvious to use iron as an internal layer of the bottom of the battery can to ensure the structural strength of the can. For the following reasons, this rejection is traversed and reconsideration is requested.

As noted above, Moriwaki et al. does not teach or suggest a layer on an outer surface of the bottom portion of a can of a secondary battery having a thickness of 30 μm to 100 μm . Moreover, Shibata et al. explicitly states that its nickel layer is not more than 5 μm . Therefore, providing the secondary battery of Moriwaki et al. with a multilayer structure according to Shibata et al. would not have taught all of the limitations of the present claims. Therefore, the rejection should be withdrawn.

CONCLUSION:

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.


Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

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